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Specification and Drawings, as originally filed, with Application for Patent Serial  
No: **2,414,518**, on January 3, 2003, by **SHAWN BEAMISH**, for "Portable Interlocking Road  
Mat".

  
Agent certificateur/Certifying Officer

August 21, 2003

Date

Canada

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**PATENT ACT**

**FORM 24**

**Title:**           A Portable Interlocking Road Mat

**Abstract:**       A portable interlocking road mat that when in place on the ground allows for the passing of heavy equipment and vehicles over uneven and varied sub terrain to remote locations and that is both easily placed and subsequently easily removed eliminating the necessity for substantive roadway preparation and finishing.

Current road mat designs are limited to large square or rectangular mats, which are designed to be laid directly onto a ground surface prior to being driven over by vehicles and equipment. These mats see such service in areas where it is prohibitively expensive to develop a full-scale roadway and where access is required and time sensitive, as well as in environmentally sensitive areas where development of a full-scale roadway is simply not feasible due to regulations and/or environmental concerns. The current designs are limited by their ability to provide some form of highly secure mechanical interlocking mechanism to prevent the shifting of the mats while being traversed by heavy equipment. If the mats shift for any reason and become unhinged, substantial damage may occur to the traversing equipment, as well such shifting requires maintenance of the mats, substantially increasing transportation costs. Though some designs exist that provide for a limited interlocking capability they are restricted in both

their ability to interlock; to allow for an even surface when placed on undulating sub soils; to allow for load dispersal and weight transfer between the structures and to allow for ease of installation and removal, i.e.: unlocking.

Common road mat designs are mainly large steel and wooden mats that are designed to be laid over the surface to be traversed. Such mats, as noted in prior art contained in Canadian patent # 2348328, generally use a rudimentary L or J shaped reversing or reciprocating style end joint or coupling end, that is easily joined upon placement but provides for very limited and inherently insecure interlocking capability. Such imprecise designs afford numerous difficulties upon removal, this mainly due to the collection of debris in the sloppy or loose mating joints. A further deficit of current designs is the capability for wildlife traversing the mats to become injured due to the substantial joint gaps required and presented by such designs. The proposed invention provides for both a secure interlocking mechanism, which provides for a true interlocking structure, as well as allowing for ease of both placement and removal while also presenting a limited end gap, preventing wildlife injury and reducing the collection of debris in the interlocking joint.

The proposed invention provides for a highly secure interlocking mechanism by virtue of the mating of reciprocal semi-circles on the mat end plates designed as one male joint and one female joint per road mat joining end. The male and female joints being located by steel plates to the road mat load bearing structure and that when joined together with another such structure become aligned and securely interlock in a reciprocating mirror

image. This interlocking system further providing for dynamic rotation of the road mat end plates in the vertical plane to allow for inconsistencies in the terrain without loss of coupling capability or strength.

The preferred embodiment of the invention consists of two smaller identical sized semi-circles, created with one half circle acting as the male joint connector and two larger identical sized semi-circles, created with another half circle, acting as the female joint connector. One of each of these male and female connectors is aligned and located to each road mat end plate by way of steel locating plates. On one end of the road mat they are aligned upright and on the other end of the same plate they are aligned identically opposite, i.e.: upside down. This allows the plates to both mesh and interlock securely and easily, either on placement or removal, in a reciprocating fashion allowing for continuous, infinite, addition of mats to the overall structure. Other embodiments of the invention may consist of variations in the shape and design of the male and female connectors, but the preferred embodiment uses common and readily available materials. It will be apparent to one skilled in the art that modifications may be made to the illustrated embodiment without departing from the spirit and scope of the invention as hereinafter defined in the claims.

**Drawings:**

**Figure 1:** Shows the road mat with male connector (a), female connector (b), support and interlocking kick plate (c) with top plate (d).

**Figure 2:** Shows the road mat with the reciprocating ends in mirror image with male connectors (a), female connectors (b), support plate and interlocking kick plates (c) mat top plate (d) and mat bottom plate (e).

**Figure 3:** Shows two road mat ends with mat 1 being the reciprocating end of mat 2 showing the interlocking male (a) and female (b) connectors with the support/kick plate (c).

**Figure 4:** Shows mat 1 and mat 2 interlocking with the male connectors (a) interlocking with the reciprocal female connectors (b) resulting in a smooth top and bottom plate joint.

**Claims:** The embodiments of the invention in which exclusive property or privilege is claimed are defined as follows:

1. A portable interlocking road mat for the carriage of vehicles and equipment over varied sub-terrain consisting of mats with interlocking and meshing ends with reciprocally fitting male and female connectors located and aligned on each mat end plate in an alternating fashion allowing for the coupling of one such mat to each successive mat.
2. A road mat interlocking design as described in claim 1 that comprises connectors on the mat end plate that act as male and female connectors.
3. A road mat interlocking design as described in claim 1 that comprises connectors acting as male connectors.
4. A road mat interlocking design as described in claim 1 that comprises connectors acting as female connectors.
5. An road mat interlocking design as described in claim 1 that comprises two semi-circle connectors per mat end plate, one each acting as either a female or male connector, positioned in tandem at each end of the mat end plate in mirror image and reciprocating fashion.
6. An interlocking design that consists of a smaller male connector interacting with a larger female connector.
7. An interlocking design that locates a smaller male connector positioned inwardly of the larger female connector on the connector locating mat end plate.

8. A road mat design that provides for dynamic rotation of the mat end plates in the vertical plane to allow for inconsistencies in the terrain without loss of coupling capability or strength.
9. A road mat design that provides for a flush end fit when interlocked with another such plate with little or no gap between each successive mat



Figure #1

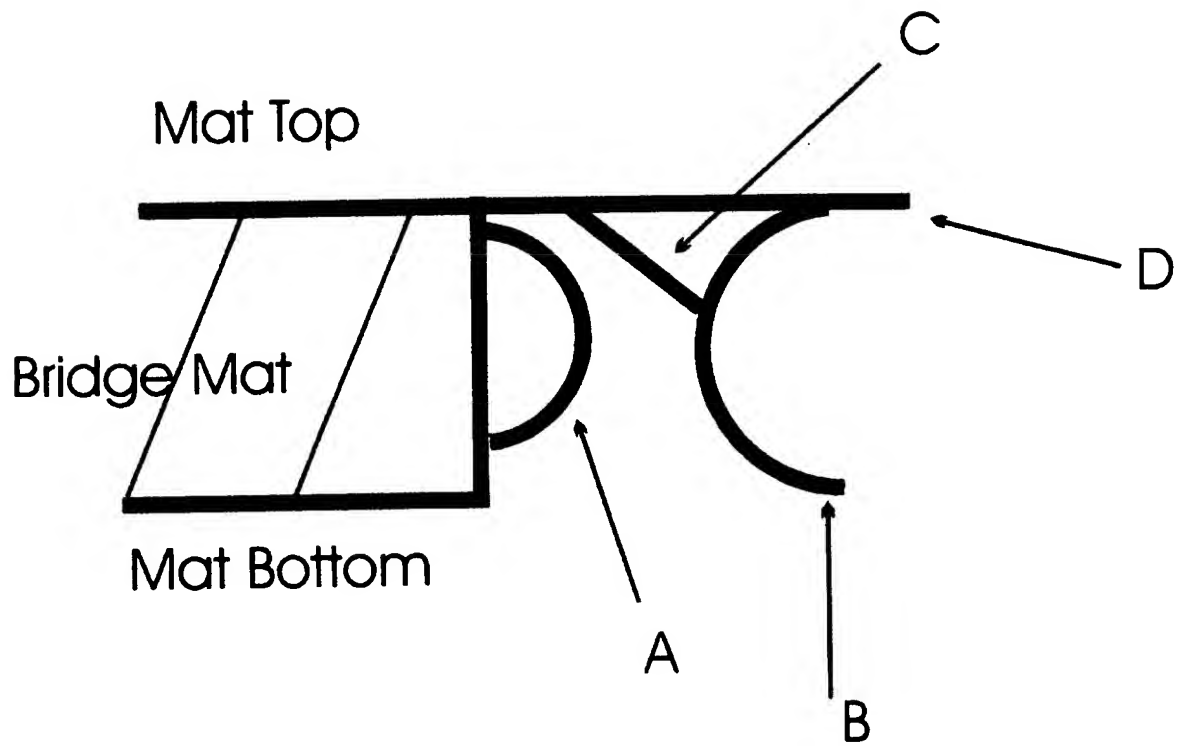


Figure #2

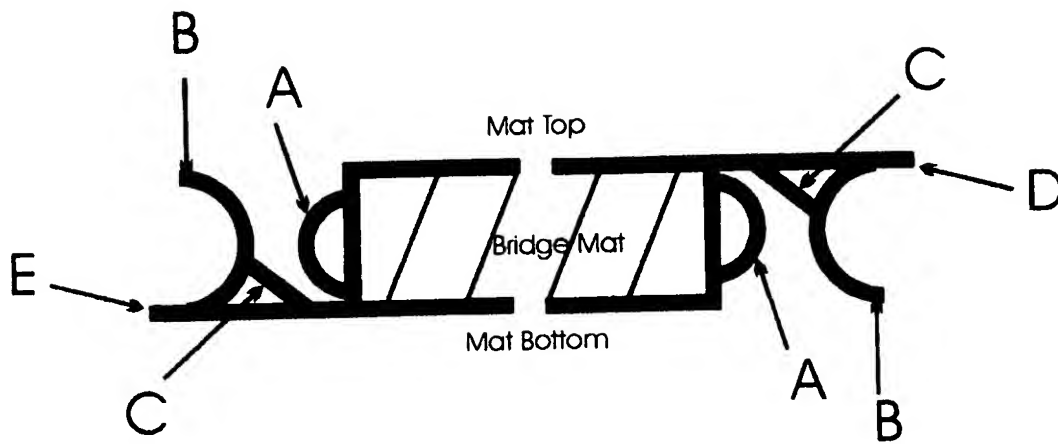


Figure #3

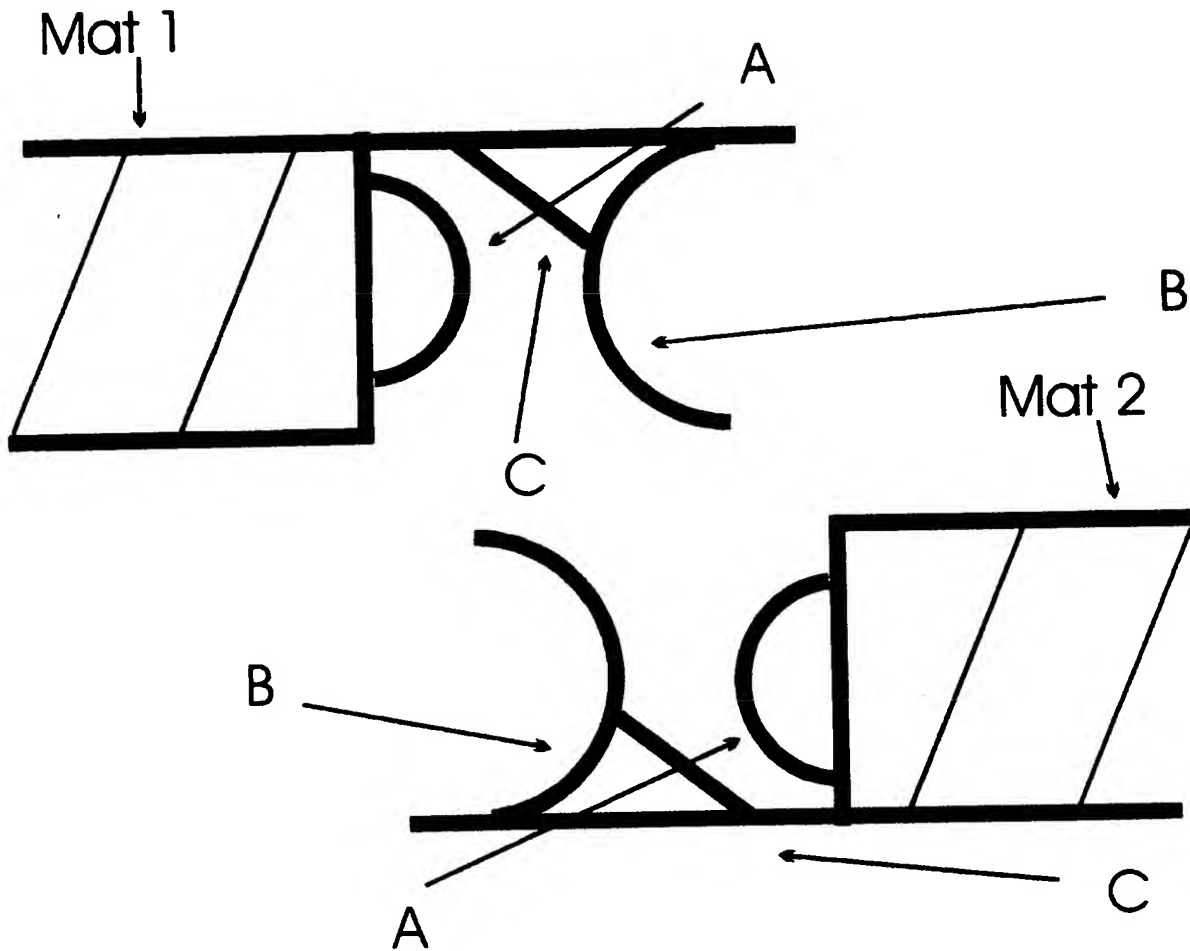


Figure #4

